2011 Ingham County Hot Weather and Health Survey Report

INTRODUCTION

Between June 6 and August 20, 2011 community partners in Ingham County, Michigan worked together to collect information from residents about their experiences with the increasing numbers of extremely hot days[1] in the county. This work was funded by the Michigan Department of Community Health (MDCH) as part of their Climate and Health partnership with the Centers for Disease Control (CDC).

Michigan residents will continue to experience an increasing number of extremely hot days, particularly in urbanized areas where there is a heat island effect[3] due to more paved areas and buildings and fewer trees and greenspaces.

Ingham County experienced numerous 90 degree days in late May and early June 2011. Emergency managers declared several days in June and July 2011 heat wave emergencies[4]. Media partners issued emergency warnings and promoted ways to prevent heat-related illness, including seeking refuge at cooling centers.

Vulnerable populations include seniors, children, and low-income residents. These groups tend to have fewer options for staying cool; getting to cooler locations; and obtaining food, water, medications and other emergency supplies and resources.

The goal of the project is to help healthcare, emergency response and local and state agencies prepare residents for the increasing number of extremely hot days. The project also informs climate justice[5] issues in Ingham County.

The Centers for Disease Control climate and public health framework was established in 2006, due to a recognition by several scientists that there was a need to prepare for the inevitability of climate change, and the impact it would likely have on the health of US residents and the world population in general. [2]

Increased Risk of Heat-Related Morbidity or Mortality

Over the course of the century, the number of hot days (exceeding 90°F) annually is projected to increase with cities such as Detroit projected to experience a doubling or tripling of such days. Of greater concern is the projected 5- to 10-fold increase in extreme heat days (exceeding 97°F). Extreme heat is associated with cramps, fainting, heat exhaustion, and heat stroke; and lengthy or repeated heat waves may not allow people to recover. The ill-health effects of heat waves may also be compounded by other problems, such as high humidity and poor air quality. In order to avoid the worst health impacts, residents will need to improve warning systems and preparations.[6]

1 Extremely hot days/extreme heat days: days on when the temperature which exceeds the maximum threshold of 95% of the distribution of daily maximum temperatures. Percentile 95 is used to define an extremely hot day and is applied to the 127 series of maximum daily temperatures from June to September threshold temperatures. www.ejournal.unam.mx/atm/Vol23-4/ATM002300401.pdf

2 www.cdc.gov/climatechange

3 Heat island effect definition: In urban areas with tall buildings, an atmospheric condition in which heat and pollutants create a haze dome that prevents warm air from rising and being cooled at a normal rate, especially in the absence of strong winds. www.answers.com/topic/heat-island-effect#ixzz1hBi7qW3

4 Heat wave emergency: excessively hot (over 105° F) heat index for multiple days, or loss of power during a heat wave.

5 Climate justice is a vision to dissolve and alleviate the unequal burdens created by climate change. As a form of environmental justice, climate justice is the fair treatment of all people and freedom from discrimination with the creation of policies and projects that address climate change and the systems that create climate change and perpetuate discrimination.

6 Union of Concerned Scientists www.ucsusa.org/greatlakes/glregionmic_hea.html

Project Objectives:

- Provide recommendations that MDCH and other agencies can use in developing adaptation strategies associated with the health impacts of climate change
- Provide information and resources to Ingham County residents to protect their health as extreme-heat days and heat wave emergencies continue to increase
- Provide energy efficiency information and resources to Ingham County residents

> "'We're particularly concerned about people with limited resources or limited mobility,' said Jessica Yorko with the Ingham County Health Department. 'As our temperatures continue to increase over long periods of days and people are exposed to extreme heat over longer periods of time, [it] increases their chance for heat illness, exhaustion, dehydration, stroke,' said Dominic Smith, project manager for the state department of community health.'" [7]

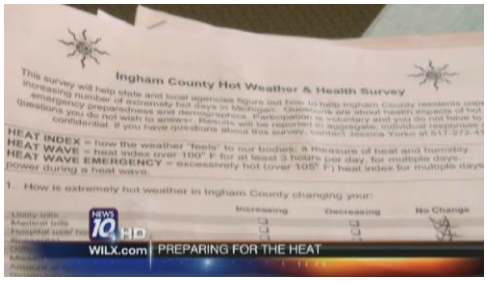
Project Limitations:

- The survey utilized a convenience sample and therefore the results are not generalizable to the total population of the City of Lansing or Ingham County
- ICHD did not monitor survey collection directly
- Partners collected surveys from 1.4% of Lansing residents

Project Assumptions:

- City of Lansing is an urban heat island within Ingham County
- Survey-takers provided accurate responses
- Increasing numbers of extremely hot days, heat waves and heat wave emergencies are impacting peoples' lives
- Survey responses provide a general idea of the hot weather experiences of low-income, older and minority residents in Lansing, Michigan
- Residents who are lower-income, senior or non-white might experience impacts more severely than higher-income, younger, white residents
- Staff and volunteers of community organizations who regularly talk with residents and/or provide health outreach services are able to collect surveys more easily than staff from ICHD or other organizations
- Staff and volunteers from organizations focused on the health of African Americans and Latinos are able to collect surveys from these constituent groups more easily than other organizations

METHODS



The Ingham County Health Department (ICHD) Environmental Justice Coordinator organized the project, working in collaboratic with ICHD staff and volunteers, six project partners, and MDCH interns, staff and contractors. Partners gathered information by asking residents to complete a 20-question survey.

Project partners include Allen Neighborhood Center, South Lansing Community Development Association, Southside Community Coalition, Northwest Initiative, Greater Lansing African American Health Institute and Lansing Latino Health Alliance. This project is a natural extension of the existing partnerships and contracts between ICHD and these community partners.

7 "Are You Prepared for the Heat?" by Meghan Norman, WILX July 18, 2011

Project partners assembled incentive items along with print materials to create gift bags for survey-takers. Sparrow Healthcare System, Physicians Health Plan, Michigan Dental Association, Chiaravalli & Maxson DDS PLLC and Lansing Board of Water and Light donated fabric tote bags, band-aid kits, toothbrushes and coupons for free complimentary compact-fluorescent light bulbs. Print materials included a directory of Ingham County cooling centers, 211 Brochures, Ingham County parks maps, Michigan Energy Options flyers, Double Up Food Bucks flyers, Healthy Homes program flyers and booklets, and other promotional information. Survey-takers could also enter into prize drawings for $5 Meijer gift cards provided by ICHD.

ICHD partner organizations gathered information by asking residents to complete a 20-question hot weather and health survey. The survey was developed by combining and adjusting questions from the Washtenaw County Hot Weather and Health Survey and other surveys used by partners at their farmers' markets and door-to-door canvas.

ICHD Public Health Nurses and Advocates piloted the survey at home visits. Staff from the Greater Lansing African American Health Institute piloted the survey at mobile food pantries and churches. Staff from NorthWest Initiative piloted the survey in their door-to-door canvas. Pilot survey-takers and survey-collectors provided helpful feedback on how to adjust questions to make easier to understand. The project coordinator adjusted question wording and order as advised.

The project utilized a convenience sample survey design[8]. Partners collected all surveys in person by circulating at farmers' markets, mobile food pantries, homeless shelters, health clinics, neighborhood centers, churches, festivals and other events asking people if they would be willing to take a survey about hot weather and health, in exchange for a free gift bag and a chance to win a $5 gift card. Some partners have significant foot-traffic in their offices because they offer services for residents. These partners asked visitors to their offices if they would be willing to take the survey.

Local media covered the project during June and July 2011:

www.wilx.com/home/headlines/Are_You_Prepared_For_The_Heat.html

www.wlns.com/global/story.asp?s=15102450

www.lansingcitypulse.com/lansing/article-6041-cool-off-on-hot-days.html

8 A convenience sample is a sample where the patients are selected, in part or in whole, at the convenience of the researcher**.** The researcher makes no attempt, or only a limited attempt, to insure that this sample is an accurate representation of some larger group or population. The classic example of a convenience sample is standing at a shopping mall and selecting shoppers as they walk by to fill out a survey.

An MDCH intern used the Survey Monkey online survey tool and manual entry option to create a system for entering the survey data into a database. An ICHD volunteer and MDCH intern entered approximately 700 surveys into the Survey Monkey database. MDCH staff and contractors entered the remaining portion. The project coordinator exported the data into a Microsoft Excel worksheet for review and analysis, and used Survey Monkey report features to create charts and tables.

QUALITY ASSURANCE/ QUALITY CONTROL

The project coordinator provided training, discussion and question and answer sessions for each of the project partners. Data-entry staff and volunteers numbered the hard-copy surveys as they entered the data from each one into the database, to correspond to the electronic survey numbers in Survey Monkey.

RESULTS

Partners distributed surveys primarily at farmers' markets, festivals, community centers, homeless shelters, clinics and homes. Partners provided 1,731 surveys with responses to ICHD. Most people were willing to fill out the survey, and many asked questions about the project and the heat, and wanted to engage on the topic.

ICHD Environmental Justice Coordinator Jessica Yorko and MDCH Project Manager/Health Educator Dominic Smith present preliminary findings at the August 2011 National Environmental Justice Conference hosted by the U.S. Environmental Protection Agency.

Demographics

- 65% female, 35% male
- 48% with income under $19,000
- 88% between ages 18 and 64
- 35-44 is the largest age group (310, 20%)
- 50% White/Caucasian, 30% Black/African American, 11% Hispanic/Latino or Spanish Origin, 3% American Indian/Alaska Native, 4% Two or more races, 2% Asian/Asian American
- 72% live in a Lansing zip code
- 50% with one or more health condition
- 8-14% more Whites/Caucasians and Asian/Asian-Americans than other race groups report 'Always' being able to meet basic needs for running water, electricity, housing, medicine and food. The largest gap is a 14% difference between White/Caucasians and Hispanic/Latino or Spanish Origin for 'Always' being able to get running water
- 22% regularly take medications that increase risk of heat-related illness. White/Caucasian and Two or more races/ethnicities have the largest percentage of respondents that are regularly taking such medications (24% and 23%, respectively)

Impacts of extremely hot weather

- 73% report 'Increasing' Utility Bills as a result of the increasing number of extremely hot days
- 41% of respondents with income under $19,999 report 'Increasing' Difficulty Getting Around Town
- Other reported impacts of extremely hot weather include difficulty obtaining work or getting to work, difficulty traveling outdoors and being outdoors, fatigue, passing out, decreased appetite and increased asthma
- Extremely hot weather in Ingham County is more severely impacting lower income residents' utility bills, medical bills, hospital use/hospitalization, illnesses, difficulty getting around town, missed work days and ability to obtain food

Cooling devices

- Central air conditioning is more common among respondents with income over $50,000, whereas electric fans or ceiling fans are more common among respondents with income $49,999 and under
- All income groups other than 'under $19,999' report central air conditioning most commonly as a workplace cooling device

Medical attention for heat-related illness

- 'Very likely' is most frequently reported for:
  - Extremely high body temperature
  - Fainting
  - Unconsciousness (54% for under $19,999 vs. 77% for $80,000-$109,000)

- 'Not at all likely' is most frequently reported for:
  - Red, hot, dry skin (no sweating)
  - Fast, strong, pulse
  - Throbbing headache
  - Dizziness
  - Heavy Sweating
  - Nausea or Vomiting
  - Muscle cramps (54% for under $19,999 vs. 68% $80,000-$109,000)

- For 'Confusion', respondents with income under $19,999 are mostly 'Not at all likely' to seek medical attention, whereas all other income groups were mostly 'Very likely'

Coping with extremely hot days, heat waves[9], heat wave emergencies

- When asked where you would go to cool of on an extremely hot day, heat wave or heat wave emergency, 'Very likely' is most frequently reported for:
  - Pool, beach, lake or other water source
  - Friends' or family members' residence

- 'Somewhat likely' is most frequently reported for:
  - Shopping mall or grocery store
  - Restaurant (34% for under $19,999 vs. 48% for $110,00 and over)

- 'Not at all likely' is most frequently reported for:
  - Public cooling center (37% for under $19,999 vs. 65% for $80,000-$109,000)
  - Social service agency or cooling center (51% for under $19,999 vs. 78% for $80,000-$109,000)

- When asked how likely you are to do any of the following during a heat wave or heat wave emergency, all options are most frequently reported 'Very likely':
  - Limit outdoor activity, exercise or work
  - Drink extra water
  - Take extra showers or baths
  - Rest more
  - Use an electric fan at residence
  - Use air conditioning at residence (64% for under $19,999 vs. 82% for $80,000-$109,000)
  - Go somewhere cooler or air conditioned

- Mode of travel to get somewhere cooler during a heat wave or heat wave emergency:
  - 'Drive myself' is the most common response. However there is a large difference between respondents with income under $19,999 of whom 53% give this response, and respondents with income between $80,000 and $109,000 of whom 87% give this response.
  - Respondents with income under $19,999 are the income group to most frequently answer:
    - Take the bus or other public transportation (41%)
    - Have family or friends take me (38%)
    - Walk or bike (31%)
    - I would not go anywhere (15%)

9 Heat Wave: heat index over 100 degrees Fahrenheit for at least three hours per day, for multiple days

- Across age and income, respondents similarly report having someone they would contact for help with emergency assistance. Across race groups, Asian/Asian American respond 'No' to this question than any other group. This race group also most frequently reports 'I would not go anywhere' about where they would go to get cooler.

- Most respondents did not indicate needing devices in order to evacuate in a heat wave or heat wave emergency. Of those who report needing devices, walkers and canes were most frequently noted, particularly among respondents with income under $19,999. Most of the Other responses were 'None/No devices needed', and:
  - Asthma Meds/Inhaler/Nebulizer/breathing machine/oxygen – 15
  - CPAP Machine – 8
  - Medicines/Medical Supplies - 7
  - Scooter – 2

Emergency Supplies

- Across races, for all items other than 'Flashlight or other light source', 63% is the highest response rate for availability of emergency supplies. Most respondents do not report availability of a 3-day supply of water, 3-day supply of medications, Radio, Land line phone, or Back-up power generator.
- Black/African American respondents more frequently report 'None of the Above' (supplies available) than any of the other race groups surveyed

- Respondents of Hispanic/Latino or Spanish Origin and Two or more races/ethnicity were less likely than other groups to have radios available
- Black/African American respondents report availability of most items less frequently than any other race group, including:
  - 3-day supply of non-perishable food
  - 3-day supply of medications
  - Flashlight or other light source
  - Radio (battery operated or crank)
  - Back-up power or generator

RECOMMENDATIONS/DISCUSSION

Project partners report that participants were glad to be asked questions about their experiences and to receive the gift-bags with resources and information. In the 'Other Comments' section of the survey, about 30 people reported "survey was too long", and another 30 said "thank you". Other comments were either related to the organization administering the survey or the event they were at, or about other struggles with their health, healthcare or other life circumstances. Those comments are attached, and highlight other individual and community needs.

The strongest part of this project is the network of community partners who collected data and contributed in-kind incentives and information for survey-takers. Other strengths of the project include the in-person exchanges that took place between survey-takers and survey-collectors and the informative television news and newspaper reporting during the project.

ICHD convened partners to review the findings of the survey and to discuss possible recommendations for our community. Our community partners and MDCH staff offered the following recommendations. We are scheduled to reconvene to discuss possible implementation.

- Involve more community-based organizations and ICHD emergency management staff in City of Lansing's 'It's a Cool Thing To Do' initiative.
    - Involve more people in determining whether or not to declare a heat-wave emergency
    - Provide information to more community partners about the criteria for determining heat-wave emergencies and consider adjusting the criteria based on community needs
    - Encourage more people to subscribe to the listserv by emailing roberlin@lansingmi.gov
    - Involve more human service providers. Schedule presentation to Power of We Consortium, a collaborative of human services providers in Ingham County

- Explore whether or not our current electrical capacity can support increase air-conditioner use to avoid extended city-wide black-outs like those frequently experienced on extremely hot days in Detroit, and determine the cost of loosing power in lost work days and other costs.

- Explore options for summer utility assistance for low-income residents.

- Involve neighborhood centers as emergency responders/ part of the emergency response network, since so many of them already serve low-income residents, seniors, expectant mothers, women and infants and women with young children.
    - Some centers also work directly with formerly incarcerated mentally ill and medicated residents whose medications may make them more sensitive to extreme heat (and their parole and probation agents).
    - Explore distributing emergency management supplies though neighborhood centers in the event of an emergency.

- Tell people in advance about where they can go in a heat-wave emergency and where to get 3-day emergency supplies, and when and why they may need to seek medical attention.

- Look for channels for improving access to medical attention for heat-related illness.

- Teach people about how their medications may make them more susceptible to heat-related illness, how to prevent heat-related illness while taking such medications, and when to seek medical attention.

- Help people recognize when there is a heat wave emergency/ where to check/ who to ask. Improve awareness among vulnerable communities and their access to information.

- Hold focus groups to learn more about why people are doing some things and not doing others.

- Since many people responded that they go to pools and beaches in extremely hot weather, make the information about heat-related illness, heat-wave emergencies, cooling centers and emergency preparedness available at those locations, while people are there seeking refuge from the heat.

- Utilize Lansing's Community Media Center and/or local television stations to produce and distribute televised media promotions about Ingham Cooling Centers.

- Develop a 1-page summary of final report and/or cover letter from ICHD Health Officer and distribute with final report to Ingham County policy-makers and non-profit organizations involved in community planning.